INTRODUCTORY REMARKS TO ORAL TESTIMONY BY JERRY WACHTEL
IN SUPPORT OF HOUSE BILL 5580
FEBRUARY 25, 2010

Chairperson Warren and Members of the Committee:

Thank you for allowing me to speak to you today on this important, and controversial topic. Before I begin my formal presentation, I would like to offer you some background about myself, and my involvement in this field.

My name is Jerry Wachtel. I am an engineering psychologist with more than 40 years of experience in the study of human performance in complex settings. Early in my career, I had the pleasure of working in the NASA Apollo Lunar Landing program. I worked in the nuclear power industry after the accident at the Three Mile Island nuclear power plant in Pennsylvania. But my greatest love, and the field in which I have spend the majority of my professional life, is the field of surface transportation, and particularly highway safety.

In 1980, while directing a research laboratory at the Federal Highway Administration in Washington, DC, I was the co-author of a report on the safety impacts of digital billboards – the first in this country. That report was honored by FHWA as the Outstanding Technical Achievement of the Year, and the report was used as evidence by the U.S. Justice Department in the landmark Supreme Court Case known as Metromedia vs. the City of San Diego.

Since that time, I have continued my research and consulting in highway safety in general, and issues of driver distraction in particular.

In the area of billboards, including digital billboards, I take pride in my independence and objectivity. That objectivity has been recognized in many ways. I serve as a consultant to the current FHWA project on digital billboards; and I am the Chair of the Subcommittee on Digital Signage for the Transportation Research Board of the National Academy of Sciences.

I have served as a consultant to city, county, and State governments throughout the country; but my services have also been retained by every one of the major digital billboard companies in the country – Clear Channel, CBS Outdoor, and Lamar. I have been hired by the Outdoor

Advertising Association of America, and the International Sign Association – the on-premise equivalent of the OAAA. In one instance, I was hired by Clear Channel in a case brought against the city of Seattle. I was then hired by the City to assist in the revision of its sign ordinance.

As you know, FHWA is currently performing its own research study into the possible distracting effects of digital billboards. I serve as a consultant to that project, and it is expected to be completed later this spring.

As you will hear during my formal presentation, I have no bias for or against digital billboards. Although the billboard industry would like to believe, and would like you to believe, otherwise, I have never once stated or suggested that digital billboards should be prohibited – my written and spoken words have consistently said the opposite – that, if properly designed, placed, and operated, they can function with no greater impact on traffic safety than conventional billboards.

Last year, I completed a study that had been requested by AASHTO, the American Association of State Highway and Transportation Officials. The States requested the study because of growing concerns about distraction from proliferating digital billboards, and the adverse safety consequences of such distraction. The purpose of my study was to critically evaluate the most recent research in the field, and to review and assess the guidelines and regulations that had been put into effect, worldwide, to control digital billboards along highways. The States wanted guidance that they could use at home pending the outcome of the FHWA study, or in the event that the FHWA study was not definitive. My report was peer reviewed, and published in April of last year. The recommended guidelines, as well as the citations and critique of every available study, worldwide, are in the report, and I can certainly make it available to you if you wish.

Some of the lessons learned during the course of my AASHTO study are incorporated into the brief presentation that I am about to give.

As you are no doubt aware, the issue of outdoor advertising in general, and digital billboard in particular, is rather highly charged politically. It is important for me to make clear to you today, that my work has been, and continues to be, based on the science, and not on any bias toward one side or the other.

With that in mind, I would like to begin my formal remarks.

Digital Billboards: Why a Moratorium?

Presented to the House Committee on Great Lakes and Environment
Lansing, Michigan

Jerry Wachtel, The Veridian Group, Inc.
February 25, 2010

Inattention vs. Distraction

- A driver may be inattentive for many reasons.
  - E.g. daydreaming, lost in thought, drowsiness, etc.
- Distraction - when a driver is delayed in the recognition of information needed to safely accomplish the driving task, because something within or outside the vehicle *draws attention* away from driving.
- It is the presence of a "triggering event" that distinguishes distraction from inattention.

In short:

- Inattention is passive
  - Drivers can be inattentive at any time and without reason
    - E.g. daydreaming, lost in thought, drowsiness
- Distraction is active
  - Drivers engage in many distractions while driving
    - E.g. eating, talking to passengers, disciplining children
    - Most such distractions are beyond our control
- But roadside advertising is a distracter that can be controlled.

Of all roadside distracters, billboards are the only ones designed and intended to distract.

Why are DBBs Different?

- The human eye is drawn to the brightest objects in the scene and to those that display motion, or apparent motion.
  - This is called phototaxis or phototropism.
  - This response is both is automatic and unavoidable
    - (Theeuwes, et al, 1999).
- DBBs use brightness and motion to capture attention.
  - The industry claims that DBBs have no movement; but it is the sudden change of light and color that conveys movement to the eye.

And they do their job…

- Speirs, et al (2008) found 96% of drivers self-reported being distracted by a billboard.
- Backer-Grondahl & Sagberg (2009) found, through self-report of 4307 crash-involved drivers, billboards were the highest relative risk distracter.
- Lee, et al (2007) in a study sponsored by the outdoor advertising industry, found more than twice as many unsafe long glances made to digital advertising signs as to conventional billboards or no billboards.
  - (More on this later).

This DBB is Shown from a Distance of Six Miles

How Else do DBBs Differ from Traditional Billboards?

- Size potential – one sign is 90 x 65 ft; 165 ft high
- Compelling photo-realistic/broadcast imagery
- Intermittency and image change at will
- Potential for message sequencing
  - (Spreading one message over several display cycles)
- Growing use of personalization and interactivity
  - (Examples to come)

The World's Largest Digital Billboard: 90' x 65' atop a 165' Post – Visible for more than 2 Miles Along I-495 in NYC

Recent Research

- In recent years, independent research studies have been conducted in several countries:
  - U.S.
  - Canada
  - Netherlands
  - England
  - Scotland
  - South Africa
  - Australia
  - Brazil
  - Norway
- Study methods included:
  - Laboratory
  - Simulation
  - On-road
  - Interviews, focus groups
  - On-line surveys
  - Post-hoc crash analyses

The Results are Becoming Clear

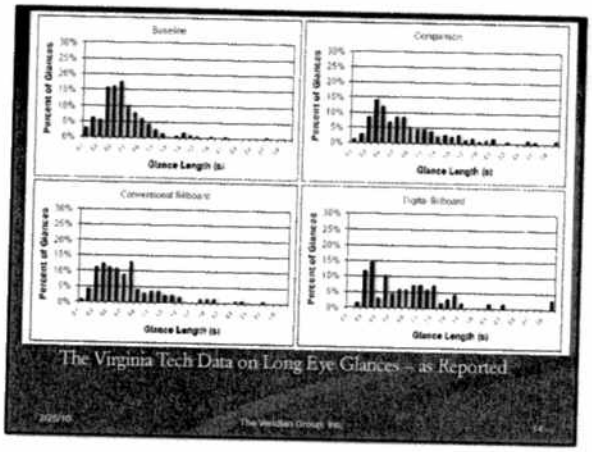
- The more recent the research, the stronger the findings, and
- The stronger the basis for understanding the nature of the problem
  - Drivers' eyes off the road for …
    - 1.6 seconds (Wierwille, 1993), or
    - 2.0 seconds (Dingus, et al 2006) – [the "100 car study"]
  - Leads to a substantially higher crash rate
- And DBBs are capturing these longer glances

Only Two Recent Sets of Studies Claim No Adverse Safety Impact

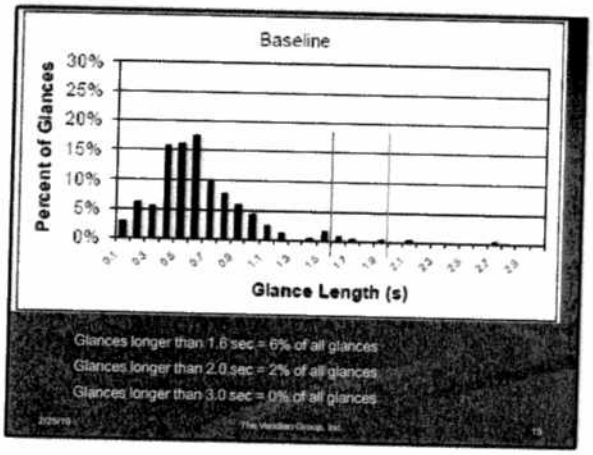
- Tantala and Tantala (2007)
- Lee, et al (2007)
  - Both sponsored by industry
  - Both rejected in independent peer review
  - Prior to publication, industry hired an expert to review these reports in draft form
    - The expert identified serious weaknesses
    - The papers were published without change
    - Once published, Maryland SHA requested its own review, and the weaknesses became public.

The Key Measure in the Lee Study

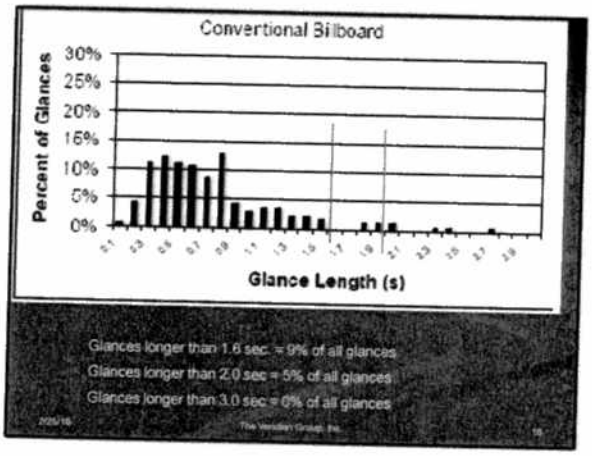
- As reported in the "100 car study," long glances away from the road are a key risk factor for crashes.
- Lee, et al suggested using a statistical method described by Horrey & Wickens (2006) to analyze "the tails of the distribution," i.e. the longest of the long glances.
- Lee, et al concluded that their data "showed no differences in the distribution of longer glances between event types" (p. 6).
  - The next few slides show the data.



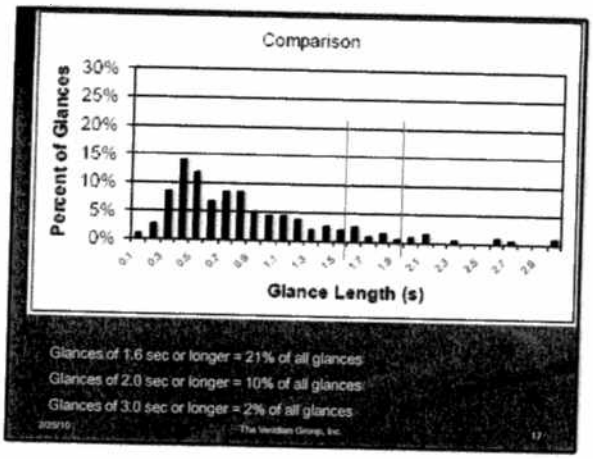
The Virginia Tech Data on Long Eye Glances – as Reported



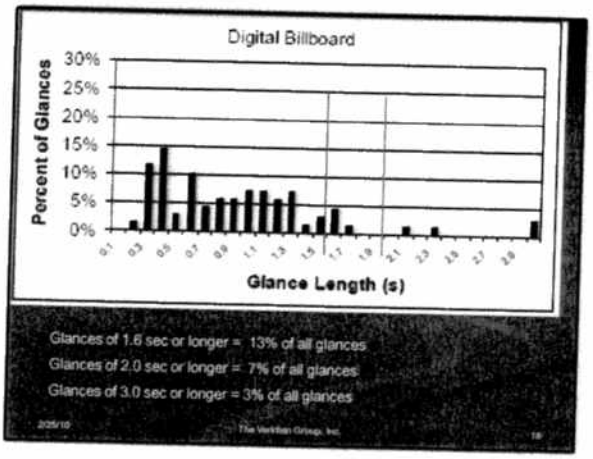
Glances longer than 1.6 sec = 6% of all glances
Glances longer than 2.0 sec = 2% of all glances
Glances longer than 3.0 sec = 0% of all glances



Glances longer than 1.6 sec = 9% of all glances
Glances longer than 2.0 sec = 5% of all glances
Glances longer than 3.0 sec = 0% of all glances



Glances of 1.6 sec or longer = 21% of all glances
Glances of 2.0 sec or longer = 10% of all glances
Glances of 3.0 sec or longer = 2% of all glances



Glances of 1.6 sec or longer = 13% of all glances
Glances of 2.0 sec or longer = 7% of all glances
Glances of 3.0 sec or longer = 3% of all glances

The Data That They Did Not Analyze

	Glances >1.6s	Glances > 2.0s	Glances >3.0s
Baseline (No billboard)	6%	2%	0%
Conventional (Traditional billboard)	9%	5%	0%
Comparison (Digital on premise)	21%	10%	2%
Digital billboard	13%	7%	3%

The Conclusions They Did Not Report

- DBBs and comparison sites (mostly on-premise DBBs) together produced:
  - 2X as many glances >1.6 seconds as baseline sites and conventional billboards (34% - 15%)
  - 2.5X as many glances >2.0 seconds as baseline and conventional sites (17% - 7%)
  - 5% of glances >3.0 seconds – no such glances were made to baseline or conventional sites.
- From a preliminary study, the authors predicted *significantly worse* DBB performance at night.
  - Why, then, did they not complete the nighttime study?

My Work Has Led Me to These Conclusions:

- Billboards have gone from paintings on barns, to print on paper, to vinyl sheets, and now to digital displays.
- It's not the technology that should concern us, but the manner in which that technology is used.
- We're not concerned because they are digital, but because of where they are placed and how they are used.

In Other Words I Believe That:

- *IF* a DBB was set to a luminance level appropriate to the ambient environment in which it is viewed, *and*
- *IF* the message change interval was such that no driver saw more than one such change, *and*
- *IF* we ensured that location restrictions (e.g. interchange areas, horizontal curves, merges, lane drops, etc.) were truly enforced,
- *THEN* we should not be particularly concerned about safety impacts due to distraction.

What About AMBER Alerts?

- Industry points to the value of DBBs for displaying AMBER Alerts, and other safety-related messages.
- This is potentially useful, but:
  - State networks of official CMS are growing.
  - Road authorities and law enforcement must control timing and content of such messages, not commercial interests.
  - Official signs are communicate quickly and efficiently (few words, simple font, consistent design) whereas billboards capture and hold the driver's attention.
  - Complex messages and unnecessary information on signs presenting important information have been shown to cause long traffic delays (Dudek, 2008).

An AMBER Alert on an Official CMS

An AMBER Alert on a DBB

Personalized and Interactive Billboards

This sign sends a personalized message to the approaching driver

An Interactive Billboard in Belgium

1. The driver sends an SMS using a code from the sign
2. The billboard sends a return message with a question
3. The driver messages a response to the question
4. A correct answer causes the billboard to act like a pinball machine – the driver is entered into a drawing; a wrong answer causes the billboard to "tilt"

New Research and Regulatory Activity

- FHWA's on-road research study is underway
  - It uses an instrumented car and records eye glances
  - Unlike recent studies, eye glance data is very precise
  - Data has been collected in two different cities
  - Final report due this Spring
- FHWA has begun an "International Scan" to learn about activities in other countries
- TRB Digital Signage subcommittee is developing other research needs – and will seek AASHTO support

The Near Future

- Current activities performed by FHWA should soon provide guidance to States and local governments.
- If not, guidelines are available based on successes elsewhere, as shown in the recent AASHTO report.
- Once a DBB is erected, it is nearly impossible to remove it.
- A moratorium makes sense for all these reasons.

Is this the alternative?

Thank you very much